Math 2260, Spring 2014, Practice Sheet for Exam 2

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1. Compute the following integrals:
   i. $\int \sin^3 x dx$
   ii. $\int \sin^4 x dx$
   iii. $\int \sin^3 x \cos^2 x dx$
   iv. $\int \tan^2(2x) dx$
   v. $\int_0^\infty e^{-x} \sin x dx$
   vi. $\int x^5 \sqrt{x^2+1} dx$
   vii. $\int \frac{2x}{x(x-5)} dx$
   viii. $\int \frac{1+x+x^2}{x^2-1} dx$
   ix. $\int \frac{x^2-4}{(2x-1)x^2} dx$
   x. $\int \frac{6x^2-4x+3}{2x^3-2x^2+3x-5} dx$
   xi. $\int sec^3 x dx$ (hint: one approach is integration by parts...)

2. Compute the volume of the solid of revolution obtained by revolving the area in the first quadrant below the curve $y = e^{-x}$ and the line about the x-axis.

3. Compute the volume of the solid of revolution obtained by revolving the area in region the bounded below by the x-axis, on the left by the y-axis, on the right by the line $x = 1$ and above by the curve $y = e^x$ about the x-axis.

4. Compute the arclength of the curve given by $y = \frac{1}{2}x^2$, with $0 \leq x \leq 1$.